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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/583,715	05/30/2000	Masakazu Ohshita	0057-4990-2	1713

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OBLON, SPIVAK, MCCLELLAND, MAIER & NEUSTADT, P.C.
1940 DUKE STREET
ALEXANDRIA, VA 22314

EXAMINER	
PARK, CHAN S	
ART UNIT	**PAPER NUMBER**
2622	

DATE MAILED: 09/11/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/583,715	OHSHITA, MASAKAZU	
	Examiner	Art Unit	
	CHAN S PARK	2622	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 6 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____ .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-25 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-25 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on 5/30/2000 is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☒ Certified copies of the priority documents have been received in Application No. 09/583715 .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 4 .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Drawings

1. The drawings are objected to because fig. 13A does not correspond with the description disclosed in the specification. Line "3-3" should be hidden according to the description and fig. 12. A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Applicant is required to submit a proposed drawing correction in reply to this Office action. However, formal correction of the noted defect may be deferred until after the examiner has considered the proposed drawing correction. Failure to timely submit the proposed drawing correction will result in the abandonment of the application.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1, 3, and 8 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

2. Claim 1 recites the limitation "steps" in the last line of the claim. There is insufficient antecedent basis for this limitation in the claim.

3. Claim 3 recites the limitation "steps" in the last line of the claim. There is insufficient antecedent basis for this limitation in the claim.

4. Claim 8 recites the limitation "steps" in the last line of the claim. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1, 3, 4, 8, 11, 15, 19, and 23-25 are rejected under 35 U.S.C. 102(e) as being anticipated by Sato et al. U.S. Patent No. 5,926,616.

5. With respect to claim 1, the Sato et al. reference discloses an image data processing method (fig. 1) for processing original image data that is bit mapped (col. 4, line 24) in a main-scanning direction X and a sub-scanning direction Y (col. 4, lines 24-29), the method comprising:

First multiplying first linearly aligned dots in the main-scanning direction X of the original bit mapped image data by a positive integer Dy (m=3) to generate Dy lines of linearly aligned dots being adjoining each other in the sub-scanning direction Y as a first group of the sub-scanning direction Y (col. 4, lines 38-41 & 8 in fig. 1);

Second multiplying second linearly aligned dots in the main-scanning direction X of the original bit mapped image data, which follow the first linearly aligned dots, by a positive integer Ry (m=3) to generate Ry lines of linearly aligned dots adjoining each other in the sub-scanning direction Y as a second group of the sub-scanning direction Y (col. 2, lines 13-15); and

Multiplying further following linearly aligned dots in the main-scanning direction X of the original bit mapped image data by repeating said first and second multiplying steps.

Referring to figs. 1, 8A, and 8B in the Sato et al. reference, they disclose a method of multiplying a horizontally aligned line of dots in each original image line by integer (m=3) to increase the resolution of it. The method discloses all the limitations of claim 1 of creating multiple dots from linearly aligned dots in the main-scanning direction X. Also, refer to col. 6, lines 45-46.

6. With respect to claim 3, the Sato et al. reference further discloses an image data processing method (fig. 1) comprising:

Third multiplying dots at a first position of the main-scanning direction X of the original bit mapped image data by a positive integer Dx (m=3) to generate Dx dots adjoining each other in the main-scanning direction X as a first group of the main-scanning direction X (col. 4, lines 38-41 & 8 in fig. 1);

Fourth multiplying dots at a second position of the main-scanning direction X, following the first position, of the original bit-mapped image data by a positive integer Rx

to generate Rx dots adjoining each other in the main-scanning direction X as a second group of the main-scanning direction X (col. 2, lines 13-15); and

Multiplying dots at further following positions in the main-scanning direction X of the original bit mapped image data by repeating the third and fourth multiplying steps.

Referring to figs. 1, 8A, and 8B in the Sato et al. reference, they disclose a method of multiplying each dots in each original image line by integer (m=3) to increase the resolution of it. The method discloses all the limitations of claim 1 of creating multiple dots from linearly aligned dots in the main-scanning direction X. Also, refer to col. 6, lines 45-46.

7. With respect to claim 4, the Sato et al. reference further discloses the positive integer Dy for the sub-scanning direction Y and the positive integer Dx for the main-scanning direction X being satisfied a required output image resolution, and the positive integer Ry for the sub-scanning direction Y and the positive integer Rx for the main-scanning direction X being satisfied a required output magnification ratio.

By using applicant's disclosed formulas (1 & 2 on page 19) of calculating the image resolution, the image resolution of the Sato et al. reference is calculated.

(Dy+Ry)/2=DPIoutY/DPIinY, wherein Dy=m=3, Ry=m=3, DPIoutY=3, and DPIinY=1. (3+3)/2=3/1=3 thus, it satisfies the image resolution.

(Dx+Rx)/2=DPIoutX/DPIinX, wherein Dx=m=3, Rx=m=3, DPIoutX=3, and DPIinX=1. (3+3)/2=3/1=3 thus, it satisfies the image resolution.

Also, by using applicant's disclosed formula (5 & 6 on page 20) of calculating the magnification ratio, the magnification ratio of the Sato et al. reference is calculated.

Ry0=(Dy+Ry)/2, wherein Dy=m=3 and Ry=m=3. Ry0=3 thus, it satisfies the magnification ratio.

Rx0=(Dx+Rx)/2, wherein Dx=m=3 and Rx=m=3. Rx0=3 thus, it satisfies the magnification ratio.

8. With respect to claim 8, arguments analogous to those presented for claim 3, are applicable.

9. With respect to claim 11, the Sato et al. reference discloses all the limitations of claim 11 as noted above in arguments for claim 1, except:

Having a memory device for storing integer values for Dy, Ry, and the original bit mapped image;

Having a memory control device configured to circularly and repetitively store data of linearly aligned dots and the multiplied dots; and

Having a data output device configured to output the circularly and repetitively stored data in the image memory device.

According to the reference, however, it also discloses a page length memory for storing a numeric value indicating the number of lines (col. 12, lines 48-53). Having known the method of storing data and having taught the method of multiplying original image dots to increase the resolution, it is inherent to have a memory device either RAM or ROM for storing Dy, Ry, and the original bit mapped image to achieve the enhancement of the image. It is also inherent to have a memory device for storing the multiplied dot data to output to the image forming device or a data output device.

10. With respect to claim 15, arguments analogous to those presented for claims 3 and 11, are applicable.

11. With respect to claim 19, arguments analogous to those presented for claims 1 and 11, are applicable.

12. With respect to claim 23, arguments analogous to those presented for claims 1 and 11, are applicable.

13. With respect to claim 24, arguments analogous to those presented for claims 3 and 11, are applicable.

14. With respect to claim 25, arguments analogous to those presented for claims 1, 3, and 11, are applicable.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 2, 5, 6, 7, 9, 10, 12-14, 16-18, and 20-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sato et al. as applied to claim 1 above, and further in view of Shimomae et al. U.S. Patent No. 5,327,260.

15. With respect to claim 2, as noted above, the Sato et al. reference discloses all the limitations of claim 1 but it does not disclose the method of generating correcting dots for reducing jagged image of the multiplied bit mapped image. On the other hand, in the applicant's admitted reference as a prior art, the Shimomae et al. reference further discloses a dot corrector (7 in fig. 2) for reducing jagged images of the sampled dots (col. 3, lines 1-5). Sato et al. and Shimomae et al. are analogous art because they are from the same field of endeavor that is the printing art. Therefore, having known the method of multiplying original image dots to increase resolution by Sato et al. and the method of reducing jagged image by Shimomae et al., it would have been obvious to one having ordinary skill in the art at the time the invention was made to combine two methods to both increase resolution and reduce the jagged image generated by multiplying original image dots.

16. With respect to claim 5, arguments analogous to those presented for claim 2, are applicable.

17. With respect to claim 6, as noted above, the Sato et al. reference discloses all the limitations of claim 1 but it does not disclose the further limitations of claim 6. On the other hand, in the applicant's admitted reference as a prior art, the Shimomae et al. reference further discloses steps comprising:

Recognizing shapes of boundaries between a black dot region and a white dot region in a region including a target dot being multiplied and dots surrounding the target dot of the bit mapped image (step (b) on page 4);

Generating code information corresponding to the recognized shapes (step (b) on page 4);

Generating corrected dot data according to the generated code information (step (d) on page 4);

Sato et al. and Shimomae et al. are analogous art because they are from the same field of endeavor that is the printing art.

Having known the dot multiplying method by Sato et al. and corrected dot data generating method by Shimomae et al., it would have been obvious to one having ordinary skill in the art at the time the invention was made to replace data of which dot have been generated in the dot multiplying steps with the generated corrected dot data and repeat from the recognizing step to the replacing step while changing the target dot one to the other.

Furthermore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to implement the Shimomae et al. method of recognizing boundary and generating corrected dot according to the code information to the Sato et al. method of increasing resolution. One would have been motivated to combine the two references to recognize the jagged boundary created from increasing the resolution and to smooth the jagged image (col. 3, lines 1-5 & col. 3, lines 12-46).

18. With respect to claim 7, arguments analogous to those presented for claim 6, are applicable.

19. With respect to claim 9, arguments analogous to those presented for claim 2, are applicable.

20. With respect to claim 10, arguments analogous to those presented for claim 6, are applicable.

21. With respect to claim 12, arguments analogous to those presented for claims 2 and 6, are applicable.

22. With respect to claim 13, arguments analogous to those presented for claims 1 and 6, are applicable.

23. With respect to claim 14, as noted above, the combination of Sato et al. and Shimomae et al. references discloses all the limitations of claim 13 but it does not disclose the further limitations of claim 14. On the other hand, in the applicant's admitted reference as a prior art, the Shimomae et al. reference further discloses the method of counting the multiplied dots at an identical location in sub-scanning direction Y and initializing the count to zero when latter count reaches the desired integer multiplying value (step (c) on page 4). It also discloses the method of outputting dot data corresponding to the code information (step (d) on page 4).

24. With respect to claim 16, arguments analogous to those presented for claims 2 and 6, are applicable.

25. With respect to claim 17, arguments analogous to those presented for claims 1 and 6, are applicable.

26. With respect to claim 18, arguments analogous to those presented for claim 14, are applicable.

27. With respect to claim 20, arguments analogous to those presented for claims 2 and 6, are applicable.

28. With respect to claim 21, arguments analogous to those presented for claims 1 and 6, are applicable.

29. With respect to claim 22, arguments analogous to those presented for claim 14, are applicable.

Conclusion

30. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

U.S. Patent 5,666,213 to Ohshita et al. discloses a method for recognizing characteristics of a boundary and correcting data pixel.

U.S. Patent 5,956,470 to Eschbach discloses a method of detecting image jaggedness and smoothing the image.

31. Any inquiry concerning this communication or earlier communications from the examiner should be directed to CHAN S PARK whose telephone number is (703) 305-2448. The examiner can normally be reached on M-F 8am-4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward Coles can be reached on (703) 305-4712. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-4750.

Csp
September 8, 2003

EDWARD COLES
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600